



Our Reference: PDY-100-A

PATENT

**ELECTRICAL HOUSING WITH NON-INTEGRAL  
CABLE OUTLET PORT MEMBER**FIELD OF THE INVENTION

[0001] This invention relates to housings for electrical devices such as connectors, fuses, and circuit breakers and, more particularly, to an improved housing having a non-integral cable de-tensioning member which is removably attached to the housing for simple economical replacement in the event of breakage. This invention also relates to an improved busbar for attachment to circuit breakers and to a method of making such a busbar.

BACKGROUND OF THE INVENTION

[0002] Housings for electrical devices, such as connectors, circuit breakers, and fuse panels, are used in many applications, including recreational vehicles such as motor homes and boats. In a typical application, the housing receives multiple cables for connection to devices within the housing and to carry electrical power to a number of devices outside of the housing. It is good practice to use de-tensioning devices within the housing to insure that electrical connections between the cables and the devices within the housing are not strained or stressed if tension is applied to the cable at some point outside the housing, an event which commonly occurs during installation and/or service.

[0003] One way to provide a de-tensioning structure is to mold a port into a panel of the housing having opposing resilient fingers defining a narrow slit-like aperture which unidirectionally resists passage of an electrical cable through the aperture. In short, the fingers permit the insertion of the cable into the housing but resist any movement in the opposite direction such as may occur if the cable were tugged or pulled at some point outside of the housing.

[0004] The problem with this approach is that the opposed fingers which make up the anti-tensioning device are frequently broken off during installation. Under these circumstances, good practice requires discarding and replacing the entire housing. Where the housing is complex, such a practice is costly and time consuming.

[0005] Where housings are designed to receive and contain conventional circuit breakers, it is typical to use in combination with said housing a busbar, usually in the form of an extruded aluminum strip having a plurality of spaced, parallel stabs projecting therefrom. Typically such a busbar is made by creating a long aluminum extrusion having the desired cross section and cutting the extrusion into short, identical pieces. Such a process of manufacture is expensive in that it requires the creation of an extrusion die, the purchase of extrusion presses, and requires significant hand labor to carry out the various operations involved in the manufacturing process.

#### SUMMARY OF THE INVENTION

[0006] A first aspect of this invention is the creation and provision of an improved housing for electrical devices having a non-integral; i.e., separately formed electrical cable outlet port member which provides the desired de-tensioning characteristic but which, because it is formed separately from the housing, can be economically and quickly replaced if broken during the installation or servicing procedures.

[0007] The non-integral outlet port member and its association with the housing can take any of several shapes and configurations, two of which are disclosed in detail in this document. In one form, an essentially rectangular member is screwed or snapped to a rear panel of the housing. In another form, the member is configured so as to slide into an opening in a side panel of the housing and be retained by a separate cover.

[0008] Another aspect of the invention is the provision of an inexpensive, easily formed busbar for mounting within an electrical device housing to receive a plurality of conventional circuit breakers and make electrical connections therewith. The improved busbar can be manufactured by creating an inexpensive stamping and thereafter bending portions of the stamping to produce the plurality of spaced, parallel stabs. In the configuration disclosed herein, the spacing between the stabs is independent of the height of the stabs.

[0009] Other objects, advantages and applications of the present invention will become apparent to those skilled in the art when the following description of the best mode contemplated for practicing the invention is read in conjunction with the accompanying drawings.